

CLAIMS

1. Filtering cartridge comprising:

- a filtering pack (3) formed by a flat filtering medium (10);

5           - a tubular sheath (2) with a perforated wall, surrounding said filtering pack (3); and

          - two respective thermoplastic end caps (5, 6), in each of which there is embedded a portion of said filtering pack (3) situated along one of its edges, and in each of which there is embedded a portion of said sheath (2) situated along one of its edges (33);

          characterised in that:

          - at least one said end cap (5, 6) has a first disc (16, 16') and a second disc (17, 17'), placed one above the other, each made from thermoplastic;

15           - it is in the said second disc (17, 17') that the said portion of the filtering pack (3) and the said sheath portion (2) are embedded;

          - the said first disc (16, 16') has a peripheral rim (19, 19') which surrounds the said portion of the sheath (2); and

20           - the said sheath (2) has a shoulder (34) opposite the edge of the said rim (19, 19') of the first disc (16, 16').

2. Cartridge according to Claim 1, characterised in that said portion of the sheath (2) forms part of a neck (32) thinner than the rest of the wall of the sheath (2).

25 3. Cartridge according to Claim 2, characterised in that said neck (32) has a thickness which increases as from the edge (33) of the sheath (2).

4. Cartridge according to either one of Claims 2 or 3, characterised in that said neck (32) is situated between the edge (33) and said shoulder (34) of the sheath (2).

30 5. Cartridge according to Claim 4, characterised in that the edge (33) of the sheath (2) extends from an internal surface, situated in continuity with the general internal surface of the sheath (2), to a frustoconical surface (36) which

extends from the edge (33) to said shoulder (34), which extends from said frustoconical surface (36) to the general external surface of the sheath (2).

6. Cartridge according to any one of Claims 1 to 5, characterised in that said rim (19, 19') of the first disc (16, 16') extends projecting from a plate (18, 18').

7. Cartridge according to Claim 6, characterised in that the thickness of said rim (19, 19') increases as from its edge (35).

8. Cartridge according to Claim 7, characterised in that the edge of said rim (19, 19') extends from an external lateral surface, having substantially the same diameter as the general external surface of the sheath (2), to a frustoconical surface extending from this rim to said plate (18, 18').

9. Cartridge according to any one of Claims 1 to 8, characterised in that said shoulder (34) on the sheath (2) and the edge (35) of said rim (19, 19') has substantially the same width.

10. Cartridge according to any one of Claims 1 to 9, characterised in that said rim (19, 19') faces said portion of the sheath (2) embedded in the second disc (17, 17') through a surface (37) which is frustoconical.

11. Cartridge according to any one of Claims 1 to 10, characterised in that said portion of the sheath (2) embedded in the second disc (17, 17') faces said rim (19, 19') through a surface (36) which is frustoconical.

12. Cartridge according to any one of Claims 1 to 11, characterised in that said portion of the sheath (2) embedded in the second disc (17, 17') and said rim (19, 19') face each other through a respective frustoconical surface (36, 37), said respective frustoconical surfaces (36, 37) being similar.

13. Cartridge according to any one of Claims 1 to 12, characterised in that said rim (19, 19') has interruptions (20).

14. Cartridge according to Claim 13, characterised in that said interruptions (20) are disposed at regular intervals and each extend over an arc with the same angle at the apex.

15. Cartridge according to Claim 14, characterised in that said rim (19, 19') has four said interruptions (20) each extending over an arc whose angle at the apex is approximately 30°.

16. Cartridge according to any one of Claims 1 to 15, characterised in that said first disc (16, 16') has, opposite to said second disc (17, 17'), an annular rib (21, 21').

5 17. Cartridge according to any one of Claims 1 to 16, characterised in that at least one said end cap (6) having a first disc (16') and a second disc (17') placed one above the other, has a central orifice (22).

18. Cartridge according to Claim 17, characterised in that the first disc (16') of the cap (6) having a central orifice (22), has a rim (19A) around said central orifice (22).

10 19. Cartridge according to any one of Claims 1 to 18, characterised in that it also comprises a tubular core (4) with a perforated wall, surrounded by said filtering pack (3) and having, along at least one edge (40), a portion embedded in said second disc (17, 17').

15 20. Cartridge according Claim 19, characterised in that each said portion of the core (4) forms part of a neck (38) which is thinner than the rest of the core (4).

20 21. Cartridge according to Claim 20, characterised in that the edge (40) of the core (4) extends from an internal surface, situated in continuity with the general internal surface of the core (2) to a frustoconical surface (39) which extends from the edge (40) to the general external surface of the core (4).

22. Cartridge according to any one of Claims 1 to 21, characterised in that the melt flow rate at 230°C and under 2.16 kg, according to the ASTM D1238 or ISO 1133 test method, is lower for the material of the first disc (16, 16') than for the material of the second disc (17, 17').

25 23. Cartridge according to Claim 22, characterised in that said melt flow rate is no more than 15 g per 10 minutes for the material of the first disc (16, 16').

24. Cartridge according to Claim 23, characterised in that said melt flow rate of the first disc (16, 16') is between 4.2 and 6.5 g per 10 minutes.

30 25. Cartridge according to any one of Claims 22 to 24, characterised in that said melt flow rate of the second disc (17, 17') is between 25 and 100 g per 10 minutes.

26. Cartridge according to Claim 25, characterised in that said melt flow rate of the second disc (17, 17') is between 65 and 75 g per 10 minutes.

27. Cartridge according to any one of Claims 1 to 26, characterised in that said end cap (5, 6) comprising a first disc (16, 16') and a second disc (17, 17') is moulded by bi-injection.

28. Cartridge according to Claim 27, characterised in that said second disc (17, 17') is moulded onto said first disc (16, 16').

29. Cartridge according to any one of Claims 1 to 28, characterised in that said first disc (16, 16') and said second disc (17, 17') are made from polypropylene.

30. Cartridge according to Claim 29, characterised in that said first disc (16, 16') is made from a homopolymer polypropylene whilst the second disc (17, 17') is made from a copolymer polypropylene.

31. Cartridge according to any one of Claims 1 to 30, characterised in that said flat filtering medium (10) forming said filtering pack (3) comprises a filtering membrane (11) and two support layers (14A, 14B) sandwiching said membrane.

32. Cartridge according to Claim 31, characterised in that said filtering medium (10) also comprises a thermoplastic ribbon (12) disposed in the vicinity of each edge (13) of said membrane (11).

33. Cartridge according to either one of Claims 31 or 32, characterised in that said membrane is made from polyvinylidene fluoride (PVDF).

34. Cartridge according to any one of Claims 31 to 33, characterised in that said support layers are made from thermoplastic.

35. Cartridge according to any one of Claims 31 to 34, characterised in that said layers (14A, 14B) and a thermoplastic ribbon (12) disposed in the vicinity of each edge (13) of said membrane (11) are made from polypropylene.

36. Cartridge according to any one of Claims 31 to 35, characterised in that each said end cap (5, 6) has a said first disc (16, 16') and a said second disc (17, 17'), and cooperates in a similar fashion with the sheath (2) and the filtering pack (3).